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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,675	04/28/2006	Sung-Jin Hong	PNK-0330	5134

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CANTOR COLBURN, LLP  
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Hartford, CT 06103

EXAMINER
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NGUYEN, THANH NHAN P

ART UNIT	PAPER NUMBER
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2871

NOTIFICATION DATE	DELIVERY MODE
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10/08/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,675	<b>Applicant(s)</b> HONG ET AL.	
	<b>Examiner</b> THANH-NHAN P. NGUYEN	<b>Art Unit</b> 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/3/08; 4/28/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being obvious over Oh et al (US 2005/0105010) in view of Choi et al (US 2005/0046774).**

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

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Oh et al disclose (Figs. 1, 3, 8) a liquid crystal display comprising:

Claims 1 and 6:

- a first insulating substrate (100)
- first and second gate lines (121, 122) formed on the first insulating substrate
- a pixel electrode (190) formed on the first insulating substrate
- a first MIM diode formed on the first insulating substrate connecting the first gate line (121) and the pixel electrode (191 - a portion of the pixel electrode 190)
- a second MIM diode formed on the first insulating substrate connecting the second gate line (122) and the pixel electrode (192 - a portion of the pixel electrode 190)
- a second insulating substrate (200) facing the first insulating substrate
- a data electrode line (270) intersecting the first and second gate lines, and wherein the data electrode line includes protrusions (at least 272 - a portion of 270) protruding to overlap a predetermined number of pixel electrodes (at least 195 - a portion of 190)

Oh et al disclose the data electrode line formed on the first insulating substrate (same substrate that the gate lines formed) instead of forming on the second insulating substrate as claimed in the present invention.

However, it would have been obvious to one of ordinary skill in the art to form the data electrode line on the second insulating substrate. It is a designer's choice to have different liquid crystal display modes, such as an in-plane switching liquid crystal display mode, where the data electrode line formed on the same substrate with the gate lines,

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or a regular liquid crystal display mode, where the data electrode line formed on other substrate with the gate lines.

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the data electrode line formed on the second insulating substrate to achieve a regular liquid crystal mode as the designer's desire.

Further, Oh et al lack disclosure of the protrusions of the data electrode lines protruding toward right and left sides by turns (and therefore, overlapping the pixel electrodes of the right and left sides by turns); wherein two adjacent data electrode lines are applied with signal voltages having opposite polarities to each other.

Choi et al disclose (Fig. 5; par. 0064) a consecutive liquid crystal cells arranged within a column may be alternately connected to left and right adjacent data lines may be driven using a dot inversion method while the data driver is driven by a column inversion method; two adjacent data electrode lines are applied with signal voltages having opposite polarities to each other. Thus, the liquid crystal display may consume a relatively small amount of power during its operation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the protrusion of the data electrode lines protruding to overlap the pixel electrode by Oh et al with the teaching of Choi et al about driving the consecutive liquid crystal cells arranged within a column may be alternately connected to left and right adjacent data lines may be driven using a dot inversion method while the data driver is driven by a column inversion method; two adjacent data electrode lines are applied with signal voltages having opposite polarities to each other for having

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the liquid crystal display consumed a relatively small amount of power during its operation.

Claim 2:

- a black matrix, a color filter, and a overcoating layer (par. 0070) disposed on the second insulating substrate

Inherently, the black matrix, the color filter and the overcoating layer disposed between the second insulating substrate the data electrode line

Claim 3:

Inherently, when a column direction represents the length direction of the data electrode line, the period of the right and left protrusions is the column direction length of two pixels.

Claim 5:

- wherein the first MIM diode includes a first input electrode (123) connected to the first gate line (121), a first contact portion (191) connected to the pixel electrode (190), a first channel insulating layer (151) formed on the first input electrode and the first contact portion, and a first floating electrode (143) formed on the first channel insulating layer and intersecting the first input electrode and the first contact portion
- the second MIM diode includes a second input electrode (124) connected to the second gate line (122), a second contact portion (192) connected to the pixel electrode (190), a second channel insulating layer (152) formed on the second input electrode and the second contact portion, and a second floating electrode

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(144) formed on the second channel insulating layer and intersecting the second input electrode and the second contact portion

Claim 7:

- wherein the first gate line and the pixel electrode are made of indium tin oxide (ITO) or indium zinc oxide (IZO) (par. 0060)

**Claim 4 is rejected under 35 U.S.C. 103(a) as being obvious over Oh et al in view of Choi et al, and further in view of Do (US 2004/0114089).**

Oh et al disclose a liquid crystal display comprising all the limitations recited in claim 1, except wherein a main element of the black matrix is an organic material.

Do discloses the black matrix is commonly formed of organic materials, such as carbon or chromium for reducing a reflection ratio of a liquid crystal display.

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the main element of the black matrix is an organic material for the benefit of reducing a reflection ratio of a liquid crystal display.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P. Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

-- September 29, 2008  
TN

/David Nelms/

Supervisory Patent Examiner, Art Unit 2871